

I CLAIM:

1. A radiant energy marking system for marking an object, comprising:
 - a) a fusible coating on the object; and
 - b) a radiant energy source for directing radiant energy at the coating in a pattern corresponding to indicia to be marked on the object, and for heating the coating to fuse the coating to the object to mark the indicia pattern on the object.
2. The system of claim 1, wherein the coating includes one of a metal material, a metal oxide material, a ceramic material, and an alloy of said materials.
3. The system of claim 1; and further comprising a stencil removably mounted on the object and having cutouts extending therethrough and filled with the coating when mounted on the object.
4. The system of claim 3, wherein the stencil has an adhesive layer for adhering to the object.
5. The system of claim 1; and further comprising a light-transmissive cover layer overlying the coating.
6. The system of claim 3, wherein the object is a diamond having a girdle, and wherein the stencil is mounted on and along the girdle.
7. The system of claim 1, wherein the object is a diamond having a girdle; and further comprising a controller for adjusting an output energy level of the radiant energy among a low energy level in which the coating is fused and raised relative to the girdle, a medium energy level in which the coating fills a crater formed in the girdle and is generally flush with and fused to the

girdle, and a high energy level in which the coating lines the crater and is below and fused to the girdle.

8. The system of claim 1, wherein the coating has a color contrasting with the object after exposure to the radiant energy.

9. The system of claim 1; and further comprising a drive for moving the radiant energy source and the object relative to each other to trace the indicia pattern.

10. A method of marking an object, comprising the steps of:

- a) applying a fusible coating on the object; and
- b) exposing the coating to radiant energy in a pattern corresponding to the cutouts and indicia to be marked on the object, and heating the coating to fuse the coating to the object to mark the indicia pattern on the object.

11. The method of claim 10, wherein the applying step is performed by depositing one of a metal material, a metal oxide material, a ceramic material, and an alloy of said materials on the object.

12. The method of claim 10, wherein the applying step is performed by forming cutouts in the indicia pattern through a stencil, mounting the stencil on the object, and filling the cutouts with the coating.

13. The method of claim 12, wherein the applying step is performed by depositing the coating as a uniform continuous layer.

14. The method of claim 10; and further comprising the step of overlying the coating with a cover layer.

15. The method of claim 10, wherein the object is a diamond having a girdle; and further comprising the step of adjusting an output energy level of the radiant energy among a low energy level in which the coating material is fused and raised relative to the girdle, a medium energy level in which the coating material fills a crater formed in the girdle and is generally flush with and fused to the girdle, and a high energy level in which the coating material lines the crater and is below and fused to the girdle.

16. The method of claim 10; and further comprising the step of moving the radiant energy source and the object relative to each other to trace the indicia pattern.

17. The method of claim 10; and further comprising the steps of heating and cleaning the object after marking has been completed.